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PRESENT STATE AND PLANS IN THE FIELD
OF VETERINARY MICROBIOLOGY

Professor Doctor A. Trawinski Lublin

Polish veterinary microbiology is hardly forty years old, the main reason being lack of proper facilities and scientific workers. Veterinary microbiology includes three branches: namely, the microflora attacking animals, the zoonotic microflora, and microflora of animal food products -- such as meat and meat products, and milk and eggs -- which can be transmitted to humans.

The history of Polish veterinary microbiology can be divided into three periods. The first period includes the years of Austrian occupation till 1918. During this period the cradle of veterinary microbiology was the Academy of Veterinary Medicine in Lwow where a professor of bacteriology, Joseph Szpilman, established the first museum of animal bacterial strains. Szpilman's research work on the anthrax bacillus, carried out under the supervision of Robert Koch in Berlin, deserves special mention. Another man of the same period whose merits rank high in the field of bacteriologic research was professor of veterinary medicine Doctor J. Nowak of Cracow whose scientific works, particularly those concerned with the microorganism causing bronchopneumonia, are widely known. The third prominent veterinary microbiologist was K. Panek, professor at the Lwow Veterinary Academy, whose research work on isolation of the tubercle and malleus bacilli from tuberculin and mallein, and on the mutation phenomenon of tubercle bacilli was of great importance. Others to be mentioned are: Professor O. Bujwid, research on rabies; Professor A. Trawinski, who carried out in a primitive field laboratory his investigations on

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morphology and biology of the coli and typhoid bacilli with special emphasis on the salmonella group; the veterinarian, Doctor Fried, who investigated the bovine type of tubercle bacillus at R. Koch's institute under direction of Lidja Rabinowicz.

During the second period from 1918 to 1939, after the resurrection of Poland at the conclusion of the first World War and creation of a veterinary faculty at the University of Warsaw, there existed two chairs of veterinary microbiology directed by outstanding scholars: Professor Szymanowski in Warsaw, and Professor Legezynski -- later on Professor Mikulaszka -- at the Academy of Veterinary Medicine in Lwow. During this period, the research work of Professor Legezynski, particularly that pertaining to the problems of brucellosis and rabies, deserves special attention. However, the above-mentioned medical doctors -- bacteriologists while working on important problems -- gave preference to a medical approach in bacteriological research, which can easily be understood. Among other scholars of this period the following names deserve to be mentioned: Professor Brill from the Microbiologic Institute under the direction of Professor Szymanowski, research on infectious abortion in mare, isolation of S. abortus equi, serophageagglutination, and analysis of receptor S. paratyphi Hirsfeldi and S. abortus equi; Professor Trawinski, microflora of the gastrointestinal tract and of the meat of edible seafood (fish, shellfish, crustacea), all of his research work having been accomplished at the Oceanographic Institute of Monaco; staff members of the Veterinary Faculty PINGW at Pulawy -- Doctor Zogrodzki, Doctor Sarnowiec, Professor Parnas, Doctor Soltys, Doctor Grycz, Doctor Teklinski, and Doctor Zylbertat (research on Brucella); Doctors Teklinski, Roginski, and

Kniazkiewicz (studies on erysipelo-trix); Doctor Zacharow (studies on the Shutz streptococcus); Doctor Meizel (bacillus mallei).

During the third period, that is from 1944 since the existence of the Polish People's Republic, there have been three chairs of veterinary microbiology at the Veterinary Faculty of the Universities of Lublin, Warsaw, and Wroclaw. Though since 1944 more workers devote their time to the study of veterinary microbiology, up to the present day almost the entire scientific effort in this branch of veterinary science has been characterized by a lack of coordination and mutual cooperation resulting in the absence of definite planning and in poor concentration of scientific effort. Inadequate personal contact among veterinary biologists could be partly blamed for the mentioned shortcomings. Creation of a veterinary section within the Polish Microbiologic Society failed to change this state of affairs and did not result in closer contact among scientists, with the exception of the conventions of the said Society, and even at these conventions the contact was only transitory. Creation of a Lublin branch of the Microbiologic Society, due to the initiative of Parnas and Fleck, had some beneficial effect upon coordination of ideas and work in the Lublin-Pulawy region. Among the College Faculties, the Microbiologic Institute UMCS at Lublin plays a leading role; at this Institute Professor Parnas and his co-workers (Kunicki, Stepkowski, Lorkiewicz, Dabrowski) investigated many problems of veterinary microbiology, particularly the antibacterial action of penicillin and some sulfonamides, use of penicillin on the malleus bacillus, Corynebacterium equi, Shigella and Bact. anitratum; also problems pertaining to brucellosis, abortion in mare of virus origin, and contagious diseases in young animals. The

second Microbiologic Institute connected with the Veterinary Faculty of the University of Warsaw under the management of Professor Brill was established later than the Lublin Institute and investigated, among others, virus abortion in mares, pathogenic microorganisms in eggs, antigenic structure of swine erysipelas bacillus, and the problem of best culture media for this bacillus. The third Microbiologic Institute at the Veterinary Faculty of the Wroclaw University under the management of a promising young professor, Doctor Skarski, did not have enough time to demonstrate its scientific achievements. The microbiologic problems connected with consumption of foods of animal origin are under the control of the respective UMGS institution in Lublin which remains in constant contact with meat distributing centers.

The State Veterinary Institute at Pulawy, with its three branches (Bydgoszcz, Drwalew, Gorzow) and eleven county Institutes of Veterinary Hygiene, which separated from the Veterinary Faculty of PINGW in 1945 and became an independent scientific and production unit, has not accomplished its tasks for the following reasons:

1. For the purpose of combating contagious epidemic diseases in animals the People's Republic required an increased, at times even gigantic, production of veterinary biologicals; this production up to recent years has been accomplished at the expense of scientific research investigation.

2. The Faculty of Microbiology PTW, until 1949 under the management of Professor Szymanowski at Lodz, had no laboratory because of lack of suitable quarters, equipment, and auxiliary scientific staff; and only in 1950, when the management of the Faculty was taken over by

Doctor Alfred Chodkowski who had returned from the Veterinary Institute at Weybridge, the Microbiologic Institute was organized in a new building of the Pulawy Veterinary Institute.

3. Lack of an adequate staff of scientists and laboratory and technical personnel as well as difficulty in obtaining copies of foreign professional literature.

Notwithstanding all these handicaps, studies on a number of microbiologic problems were undertaken at PIW during the five-year period; these studies, though very important, were carried out without a plan. The following problems were under investigation: Streptococci -- Streptococcus zooepidemicus (Doctor Chodkowski and Doctor Szaflarski); streptococci encountered in udder inflammations of cows (Doctor Chodkowski); Salmonella: the microflora of the gastrointestinal tract in healthy fish (Doctor Trawinska), Salmonella paratyphi A in swine (Doctor Czarnowski); swine erysipelas -- a benign strain of bacillus erysipelas (Doctors Janowski, Kobusiewicz, Trawinska, Steffen, Chwalibog); brucellosis -- value of the complement fixation phenomenon (Doctor Czarnowski); viruses -- the Indian virus of chicken pestilence (Doctor Teklinski and Doctor Teklinska); bacterial flora in healthy animals (Doctors Nawrocki, Kaminska, and Muszynski, and veterinary doctor Kowalewska); flora in stallion sperm with special attention to the hemolytic streptococcus (Doctors Bielanski, Chodkowski, Szaflarski, and Wisniowski); application of penicillin and streptomycin in diagnostic vaccination of white mice against rabies (Doctor Wisniowski); Pfeiffer's Bacillus hemophilus in hogs (Doctor Lozinski); bacteriophages, serology of Coli bacteria (Professor Parnas and co-workers).

In agreement with the scientific council of the Ministry of Agriculture and Agricultural Reforms and the Veterinary Department of this Ministry, the following program of microbiologic and above all virusologic studies is planned for the next six-year period. While the knowledge and understanding of infectious diseases caused by bacteria is usually acquired together with the development of methods for their prevention, animal virus diseases are not sufficiently known as yet; that is why the fight against them is so difficult. Because of great losses suffered by animal stock due to virus diseases, a thorough study of virus biology as well as of the problem of prophylaxis and fight against virus diseases becomes imperative from the point of view of the animal breeding industry requirements covered by our Six-Year Plan. Till now, Polish veterinary science can claim only insignificant achievements in the field of scientific research on animal viruses. Whatever has been achieved, was accomplished under very primitive conditions. It is therefore necessary that new opportunities be created in the immediate future for laboratory and practical studies which will be carried out jointly by the staff of the State Veterinary Institute and practicing veterinarians in our country and abroad. The following subjects are to be worked out:

Grippe and grippe-like diseases: Working team -- Professor Legezynski, Professor Zulinski and Professor Harnach (Brno CSR Czechoslovak Republic).

Klobouk's (or Teschens) and Aujeszky's diseases. Working team -- Doctor Szaflarski, Professor Zakrzewski and Professor Potocka (Prague).

MurRAIN and psuedo-murRAIN of hogs: Working team -- Professor Zulinski, Doctor Majdan, Associate Professor Chodkowski, Professor

Manninger (Budapest) and Professor Jellinek (Brno).

Rabies: Working team -- Professor Legczynski and Doctor Janowski.

Contagious anemia and meningitis of horses: Working team -- Professor Parnas, Professor Stryszak, Professor Zulinski, Associate Professor Domanski, and Professor Leonow (Moscow).

Pestilence and pseudo-pestilence of poultry: Working team -- Professor Brill, Doctor Teklinski, Doctor Teklinska, and Doctor Wojciechowska.

Virus abortion in mares: Working team -- Professor Brill, Professor Parnas, Doctor Domanski.

Viruses and hygiene of food products of animal origin. Working team -- Professor Trowinski, Doctor Trawinska.

The fulfillment of this work requires that some of our scientists take trips to the Soviet Union, Czechoslovakia, and the German Democratic Republic in order to get acquainted with their methods and the scientific achievements of these countries, it is necessary that special funds be granted for the purchase of indispensable apparatus and other scientific material, and means of transportation be secured in order to maintain contact with the farm areas.

The following provisions ought to be included in the Six-Year Plan:

1. Centers should be established for studies on (a) salmonella, at the County Institute of Veterinary Hygiene of the State Veterinary Institute of Katowice and at the Institute for Study on Foods of Animal

Origin at the University of Lublin; (b) streptococci and anaerobic bacteria at the Microbiologic Faculty PIW of Pulawy; (c) leptospirosis at the Anatomic-Pathological Department of PIW of Pulawy; (d) brucellosis and tularemia at the County Institute of Veterinary Hygiene of Lublin and at the Microbiologic Institute MCS of Lublin.

2. The production center of Veterinary biochemicals should be separated from PIW of Pulawy.

3. Elaboration of standard methods for a prompt and correct diagnosis of contagious diseases for the use of County Veterinary Hygiene Centers.

4. Study of the problem of bacterial contamination of meat and meat products, with respect to canned food in particular.

5. With respect to the fight against contagious diseases -- establishment of the closest cooperation with farm areas, in particular with PSR and productive cooperatives.

6. Training of badly needed cadres of veterinary microbiologists, laboratory workers and technicians at PIW in Pulawy and at the biologic faculties of the Universities of Lublin and Warsaw.

As may be concluded from the above, Veterinary Microbiology is facing a tremendous task of great importance to the country. The realization of this task requires that veterinary microbiology not be considered a separate science but remain closely connected with epizootiology and hygiene. For the mere knowledge of systematology and biology of the microorganism is inadequate when it comes to coordination of bacteriologic problems with actual practice. The

prevention, diagnosis and fight of infectious animal diseases must also be considered.

For the future realization of the tasks of Polish veterinary microbiology the following requirements must be given full attention:

1. The Microbiologic Chairs of Veterinary Faculties of Universities and of the Veterinary Institute PIW should be provided with an adequate personnel and modern equipment, also, professional literature should be made available -- Soviet as well as Western European and American, especially with respect to the knowledge of virus diseases.
2. In connection with the Microbiologic Faculty of PIW in Pulawy, an experimental farm and research center for virus diseases should be organized, also a bacteriologic museum to provide for the correct classification of microorganisms.
3. County Institutes of Veterinary Hygiene should be freed from excessive administrative duties; this will enable them to devote more of their time to scientific research.
4. Close cooperation of Institutions of Veterinary Microbiology with farms, specifically, with the PCR and productive cooperatives, also with centers for study of human microbiology, including the State Institute of Hygiene.
5. We ought to follow the lead of Soviet research, particularly in the field of bacteriology, with proper attention paid to the recent works of Boszjan, and to approach scientific problems in a dialectic manner with consideration given to recent concepts of genetics.